

RESTORATION ISSUES
QUEETS-QUINAULT SUBBASIN

Riverine

- Changes in sediment transport and hydrology associated with receding glaciers
- Fish passage
- Forest road impacts to hydrology
- Off-channel habitat connectivity
- Overwater structures in littoral habitat of Lake Quinault:
- Reduced nutrient levels related to reduced salmon returns
- Reduction of mature forest and large wood debris (LWD) in the Upper Quinault floodplain and river channels
- Sedimentation from logging roads and past forestry practices
- Simplified channels, disconnected floodplains, and degraded riparian conditions.



GRAYS HARBOR COUNTY
Shoreline Master Program

MAP LEGEND

- Subwatershed Boundary¹
- Watershed²
- Pacific Ocean
 - Lower Quinault River
 - Moclips River-Frontal Pacific Ocean
 - Queets River
 - Raft River-Frontal Pacific Ocean
 - Upper Quinault River

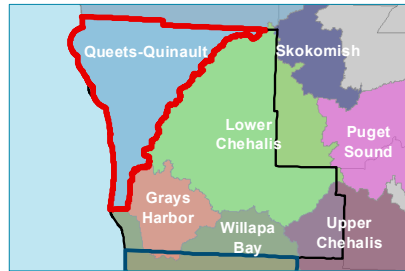
NOTES:
¹ Subwatersheds derived from 12-digit hydrologic units (boundaries from USGS).
² Watersheds derived from 10-digit hydrologic units (boundaries from USGS).

Data Sources:
WA State Department of Ecology, Grays Harbor County, USGS, The Watershed Company.

Date: 6/30/2015
File Name: GHC_RestorationPlan_Map



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RESTORATION ISSUES
LOWER CHEHALIS SUBBASIN

Riverine

- Channel incision and channelization limits floodplain functions
- Channel migration is limited
- Degraded riparian conditions, particularly in lower 22 miles
- Degraded riparian corridor
- Degraded riparian corridors
- Degraded riparian corridors
- Disconnected floodplain
- Excess fine sediment
- Excess fine sediment
- Excess fine sediment delivery
- Excess sediment
- Fine sediment
- Fish passage
- Fish passage barriers
- Fish passage barriers- Wynoochee dam and road crossings
- Floodplain connectivity
- Floodplain connectivity in lower watershed
- High water temperatures in mid to low flow months
- Hydrograph altered with higher and more widely fluctuating flows in winter
- Impaired channel migration and floodplain storage
- Limited floodplain and estuarine connectivity
- Low base flows
- Low base flows
- Low levels of LWD
- Reduced LWD
- Variable densities of LWD
- Water flow impaired in lower mainstem and WF Wishkah
- Water quality (elevated temperatures, carbaryl in estuarine areas)
- Water quality- elevated water temperature and sediment loads
- Water quality- high levels of fine sediment



GRAYS HARBOR COUNTY
Shoreline Master Program

MAP LEGEND

Subwatershed Boundary¹

Watershed²

- Cloquallam Creek-Chehalis River
- Hoquiam River-Frontal Grays Harbor
- Humptulips River-Frontal Grays Harbor
- Satsop River
- Wishkah River
- Wynoochee River

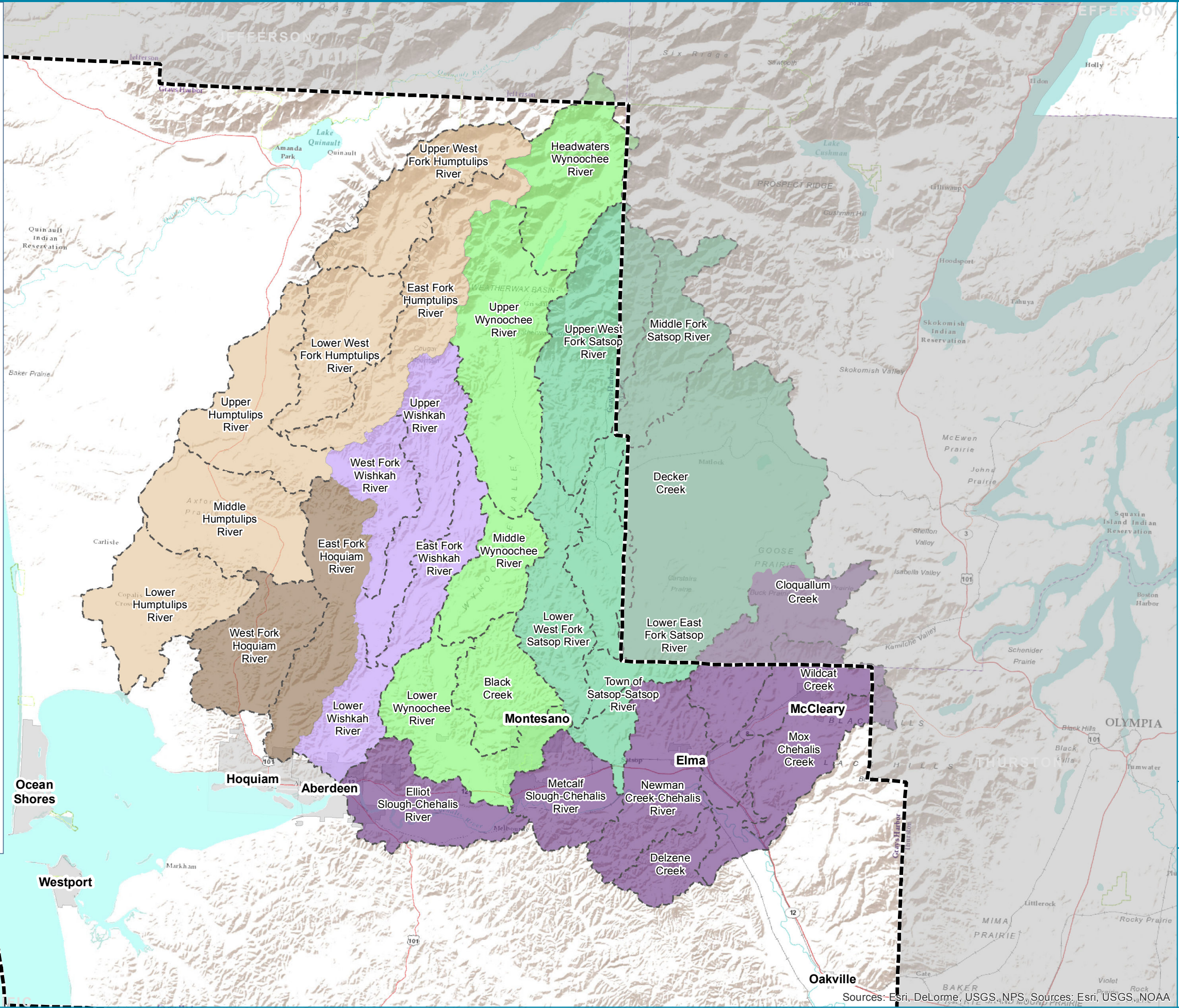
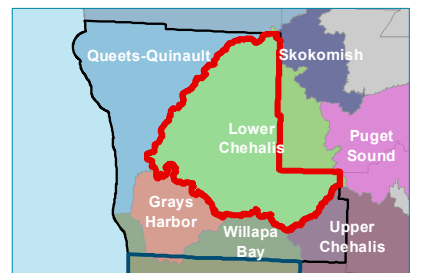
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Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

RESTORATION ISSUES
GRAYS HARBOR SUBBASIN

- Estuarine**
- Fish passage
- Riverine**
- Degraded riparian conditions
 - Fish passage
 - Floodplain connectivity
 - Low levels of LWD
 - Sedimentation (extent of concern is unknown)
 - Water flow processes
 - Water quality impairments (fecal coliform, sediment, and temperature)



GRAYS HARBOR COUNTY
Shoreline Master Program

MAP LEGEND

Subwatershed Boundary¹

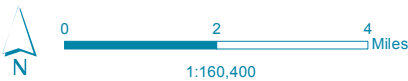
Watershed²

- Grays Harbor
- Hoquiam River-Frontal Grays Harbor
- Humptulips River-Frontal Grays Harbor
- Johns River_Frontal Grays Harbor

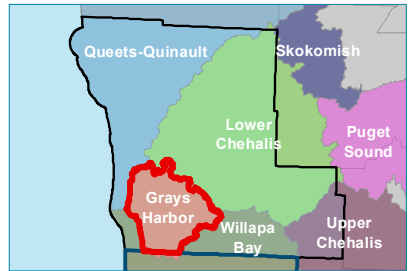
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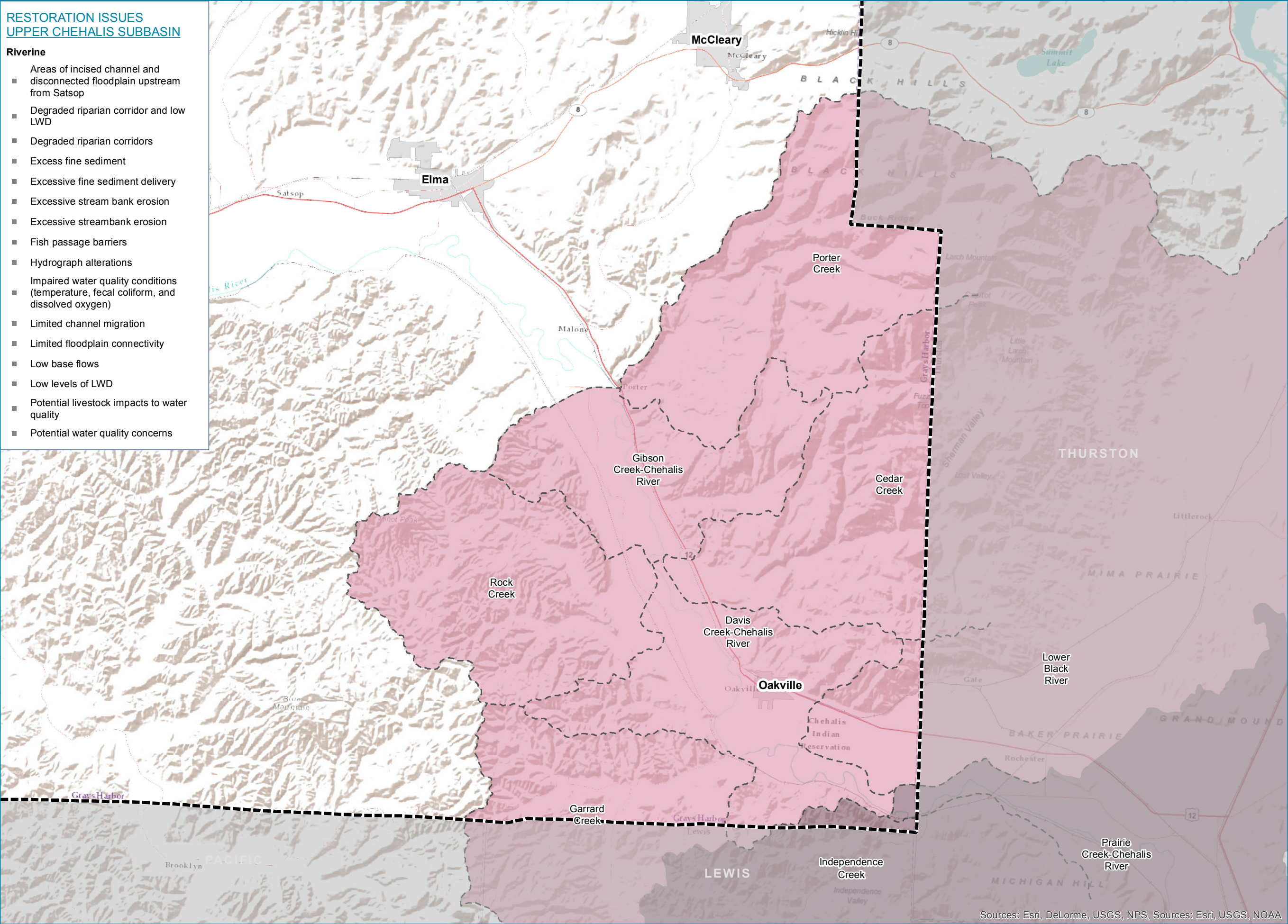
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RESTORATION ISSUES
UPPER CHEHALIS SUBBASIN

Riverine

- Areas of incised channel and disconnected floodplain upstream from Satsop
- Degraded riparian corridor and low LWD
- Degraded riparian corridors
- Excess fine sediment
- Excessive fine sediment delivery
- Excessive stream bank erosion
- Excessive streambank erosion
- Fish passage barriers
- Hydrograph alterations
- Impaired water quality conditions (temperature, fecal coliform, and dissolved oxygen)
- Limited channel migration
- Limited floodplain connectivity
- Low base flows
- Low levels of LWD
- Potential livestock impacts to water quality
- Potential water quality concerns



GRAY'S HARBOR COUNTY
Shoreline Master Program

MAP LEGEND

Subwatershed Boundary¹

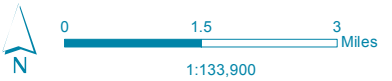
Watershed²

- Black River-Chehalis River
- Independence Creek-Chehalis River

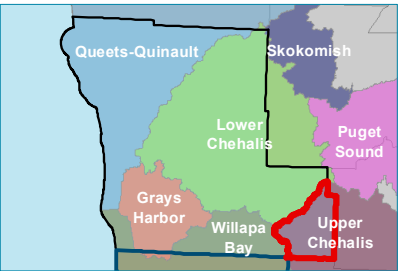
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RESTORATION ISSUES
WILLAPA BAY SUBBASIN

Ocean

- Derelict fish gear and marine debris
- Loss or change in habitat with climate change
- Water quality (fecal coliform)

Riverine

- Degraded riparian corridors
- Fish passage barriers
- Limited spawning substrate



GRAYS HARBOR COUNTY
Shoreline Master Program

MAP LEGEND

Subwatershed Boundary¹

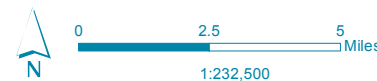
Watershed²

- Pacific Ocean
- Long Beach-Frontal Pacific Ocean
- North River
- Smith Creek-Frontal Willapa Bay

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